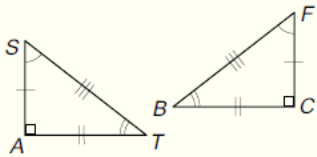


Isosceles Triangle Theorems

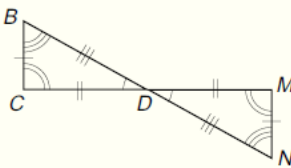
Complete each correspondence statement.

1.



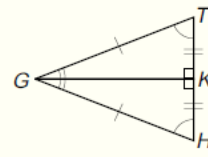
$$\triangle SAT \cong \triangle FCB$$

2.



$$\triangle BCD \cong \triangle MND$$

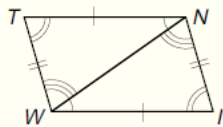
3.



$$\triangle GHK \cong \triangle GTH$$

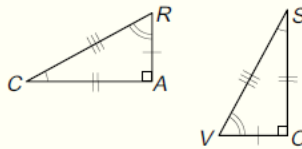
Write a congruence statement for each pair of congruent triangles.

4.



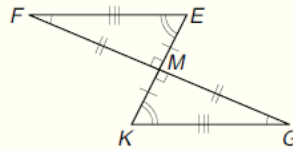
$$\triangle TWN \cong \triangle INW$$

5.



$$\triangle CRA \cong \triangle SVO$$

6.



$$\triangle FEM \cong \triangle GKM$$

Draw triangles $\triangle EDG$ and $\triangle QRS$. Label the corresponding parts if $\triangle EDG \cong \triangle QRS$. Then complete each statement.

$$7. \angle E \cong \angle Q$$

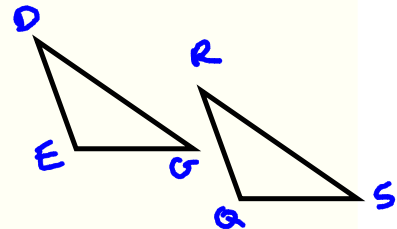
$$8. \overline{DG} \cong \overline{RS}$$

$$9. \angle EDG \cong \angle QRS$$

$$10. \overline{GE} \cong \overline{SQ}$$

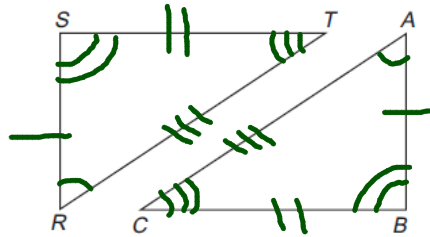
$$11. \overline{ED} \cong \overline{QR}$$

$$12. \angle EGD \cong \angle QSR$$



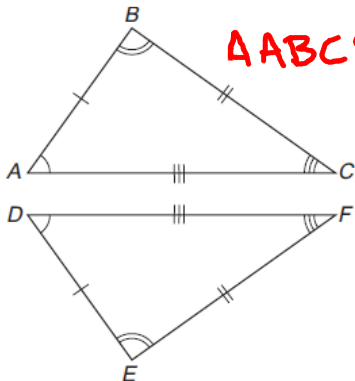
Label the corresponding parts if $\triangle RST \cong \triangle ABC$. Use the figures to complete each statement.

1. $\angle C \cong ?$ $\angle T$
2. $\angle R \cong ?$ $\angle A$
3. $\overline{AC} \cong ?$ \overline{RT}
4. $\overline{ST} \cong ?$ \overline{CB}
5. $\overline{RS} \cong ?$ \overline{AB}
6. $\angle B \cong ?$ $\angle S$

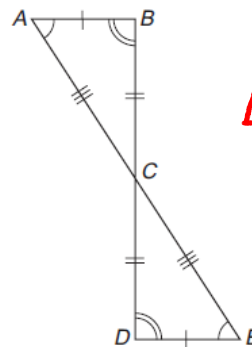


Write a congruence statement for the congruent triangles in each diagram.

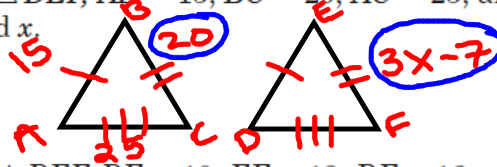
7. $\triangle ABC \cong \triangle DEF$



8. $\triangle ABC \cong \triangle EDC$

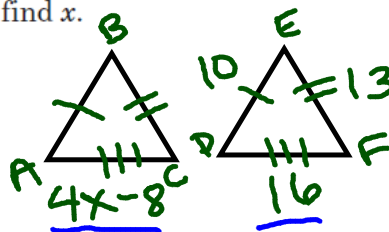


9. Given $\triangle ABC \cong \triangle DEF$, $AB = 15$, $BC = 20$, $AC = 25$, and $FE = 3x - 7$, find x .



$$\begin{aligned} 20 &= 3x - 7 \\ +7 & \quad +7 \\ 27 &= 3x \\ x &= 9 \end{aligned}$$

10. Given $\triangle ABC \cong \triangle DEF$, $DE = 10$, $EF = 13$, $DF = 16$, and $AC = 4x - 8$, find x .

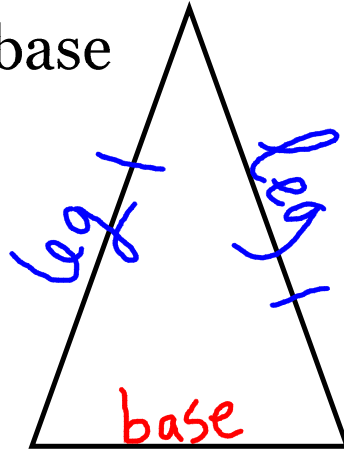


$$\begin{aligned} 4x - 8 &= 16 \\ +8 & \quad +8 \\ 4x &= 24 \\ x &= 6 \end{aligned}$$

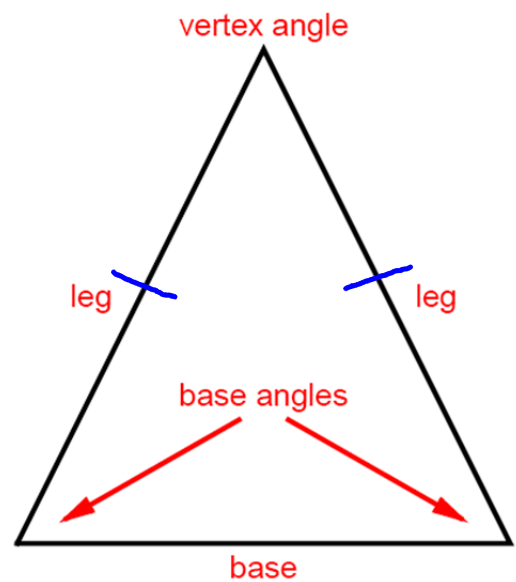
What is an isosceles triangle?

As we discussed in a previous section isosceles triangles are triangles with at least two sides congruent.

The two congruent sides are called legs and the third side is called the base



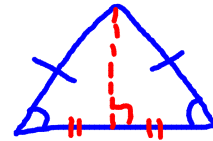
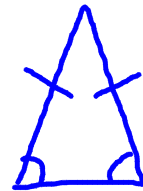
Examining the parts of an isosceles triangle



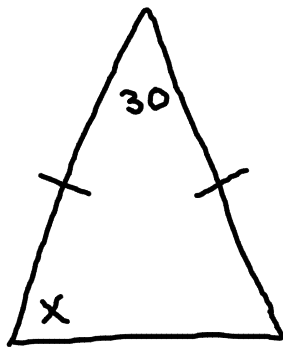
The Isosceles Triangle Theorem

If two sides of one triangle are congruent, then the angles opposite those sides are congruent.

- Corollary 1: An equilateral triangle is also equiangular.
- Corollary 2: An equilateral triangle has three 60° angles.
- Corollary 3: The bisector of the vertex angle of an isosceles triangle is perpendicular to the base at its midpoint.



The converse: If two angles of a triangle are congruent, then the sides opposite those angles are congruent.



$$180 - 30 = 150$$
$$150 / 2 = 75$$